

IN THE CLAIMS

Please amend the claims as follows.

Applicant presents the claims as amended below and encloses a separate sheet indicating the amendments to the claims with bracketing and underlining.

1. (Amended) System for the automatic analysis of images, such as images of DNA microarrays after hybridisation, said images comprising a matrix of points or spots, the system being adapted to be associated with a sensor for acquiring said images and comprising a circuit for processing the signals corresponding to said images generated by said sensor, wherein said processing circuit is configured according to a cellular neural network (CNN) architecture for the parallel analogue processing of said image signals.

2. (Amended) System according to claim 1, wherein said sensor is configured to acquire, as said images, fluorescence images from DNA microarrays.

3. (Amended) System according to claim 1, wherein said cellular neural network architecture comprises matrix of cells locally interconnected by means of synaptic connections, said matrix presenting a spatial distribution which is essentially correlated to the matrix form of said images.

4. (Amended) System according to claim 1, wherein said sensor is a matrix optical sensor.

5. (Amended) System according to claim 1, wherein said sensor is a colour optical sensor.

6. (Amended) System according to claim 1, [characterised in that] wherein said sensor is an optical sensor which is selectively sensitive to distinct chromatic components of said images.

7. (Amended) System according to claim 6, wherein said processing circuit is configured to process signals corresponding only to some of said distinct chromatic components of said images.

8. (Amended) System according to claim 7, wherein said processing circuit [(20)] is configured to process signals associated only to distinct chromatic components of said images (I) with the exclusion of the blue chromatic component.

9. (Amended) System according to claim 1, wherein said processing circuit is configured for processing the signals corresponding to said distinct chromatic components of said images in parallel.

10. (Amended) System according to claim 1, wherein said sensor and said processing circuit are integrated in a single chip.

11. (Amended) System according to claim 1, wherein said sensor and/or said processing circuit implement VLSI CMOS technologies.

12. (Amended) System according to claim 1, wherein said processing circuit is configured to perform on said signals corresponding to said images at least one of the operations selected from the group consisting of:

- background clearing of said images,
- grid analysis of said images,
- elimination of smaller irregular spots,
- elimination of the larger spots,
- intensity analysis, and
- threshold definition.

13. (Amended) System according to claim 1, wherein said processing circuit is configured to combine the processing results obtained in relation to distinct chromatic components of said images.

14. (Amended) System according to claim 13, wherein said combination operation is a logic product (AND - 40).

15. (Amended) System according to claim 1, wherein said processing circuit comprises:

at least one analogue memory for storing signals corresponding to said images and a control logic for running real time processing sequences of said images.

16. (Amended) System according to claim 15, wherein said images and the intermediate processing stages are stored by at least one analogue memory.

17. (Amended) System according to claim 15, wherein said processing circuit comprises means for storing the configuration parameters of said cellular neural network.

18. (Amended) System according to claim 17, wherein said configuration parameters are stored in digital form and said processing circuit comprises a digital/analogue converter to convert said parameters to analogue form in order to be input to said cellular neural network.

19. (Amended) System according to claim 1, wherein said processing circuit processes said signals corresponding to said images by applying sets of parameters (templates) of the cellular neural network.